PROJECT NUMBER: 1756
PROJECT TITLE: Analytical Sensory Correlations
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PERIOD COVERED: July, 1987

INVESTIGATION OF ASHTRAY ODOR

A. **Objective**:

1. Define the "ashtray odor."

2. Establish a sampling protocol yielding extract with odor most similar to the "ashtray odor."

B. **Results**:

1. From limited subjective data from the cigarette butts of Marlboro s.p., the typical descriptors used for "ashtray odor" were stale, smoky, earthy, sooty, and stale tobacco smoke. The smoky note was very strong initially and decreased with time while the intensity of stale character changed in the opposite fashion. A steady state appeared to be established within 2 hours. Searching the Odor Profiling Database with the above descriptors produced a list of compounds consisting of pyridines, pyrazines, pyrroles, and guaiacol. Complete subjective data will be available from the Odor Profiling Panel.

2. Headspace sampling using a closed loop stripping technique with a charcoal trap and vacuum distillation were compared in the odor analysis of cigarette butts. Vacuum distillation yielded a yellowish aqueous solution with odor more similar to the "ashtray odor" than the headspace method. The principal difference of these two methods was in their ability to recover water-soluble substances which gave a strong smoky odor. Because of the hydrophobic nature of the charcoal, the headspace extract was more stale and less smoky.

C. **Conclusions**: Vacuum distillation of cigarette butts of Marlboro s.p. produced an extract most similar to the "ashtray odor."

D. **Plans**: To isolate and identify the substances responsible for the "ashtray odor" from vacuum distillation extracts by using odor sniffing and trapping of effluents from preparative GC and multidimensional capillary GC/MS.